R E P O R T R E S U M E S

ED 017 619 VT 000 042

NORTH ATLANTIC REGIONAL RESEARCH CONFERENCE IN AGRICULTURAL EDUCATION, CONFERENCE PROCEEDINGS (ITHACA, NOVEMBER 5-7, 1963).

STATE UNIV. OF N.Y., ITHACA

PUB DATE 63

EDRS PRICE MF-$0.25 HC-$2.08 50P.

DESCRIPTORS- *AGRICULTURAL EDUCATION, *EDUCATIONAL RESEARCH, *RESEARCH METHODOLOGY, *OFF FARM AGRICULTURAL OCCUPATIONS, SPEECHES, *CONFERENCES, NORTH ATLANTIC REGION,

THIS PUBLICATION REPORTS ON SIGNIFICANT SPEECHES, CURRENT RESEARCH, AND COMMITTEE WORK DURING THE 3-DAY CONFERENCE FOR TEACHER EDUCATORS, SUPERVISORY STAFF MEMBERS, TEACHERS OF AGRICULTURE, AND GRADUATE STUDENTS IN AGRICULTURAL EDUCATION. DIGESTS OF THE FOLLOWING SPEECHES ARE GIVEN--(1) "PROGRESS REPORT OF STATE STUDIES IN NON-FARM AGRICULTURAL OCCUPATIONS," BY ROBERT E. TAYLOR, (2) "DESIGNING RESEARCH IN EDUCATION" AND "SUGGESTIONS FOR THE PREPARATION OF EDUCATIONAL RESEARCH MATERIALS," BY DAVID R. KRATHWOHL, AND (3) "RESEARCH IMPLICATIONS OF THE STUDY OF EMPLOYMENT OPPORTUNITIES AND NEEDED COMPETENCIES IN NON-FARM AGRICULTURAL OCCUPATIONS," BY DUANE M. NIELSEN. COMPLETE TEXTS ARE GIVEN FOR (1) "RESEARCH EXPERIENCES," BY LAWRENCE B. DARRAH, AND (2) "OUR NATIONAL CENTER FOR ADVANCED STUDY AND RESEARCH IN AGRICULTURAL EDUCATION," BY C. W. HILL. REPORTS ARE GIVEN FOR THE FIVE WORK GROUPS WHO STUDIED RESEARCH PROJECTS OR PROPOSALS SUBMITTED IN ADVANCE BY SEVERAL STATES AND SUGGESTED IMPROVEMENTS IN THEIR DESIGN. (PS)

DOCUMENT FILMED FROM BEST AVAILABLE COPY

ED017619

42

NORTH ATLANTIC REGIONAL RESEARCH CONFERENCE in AGRICULTURAL EDUCATION

1963

CONFERENCE PROCEEDINGS

VT000042

Agricultural Education Division
Rural Education Department
New York State College of Agriculture
Cornell University
Ithaca, New York

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

NORTH ATLANTIC REGIONAL RESEARCH CONFERENCE IN AGRICULTURAL EDUCATION

Teacher Educators, Supervisors, Program Consultants, Guests, and Graduate Students of Vocational Education in Agriculture from:

Cornell University
Delaware State Education Department
Michigan State University
New York State Education Department
Pennsylvania State University
Pennsylvania State Education Department
Rutgers University
The Ohio State University
University of Delaware
University of Maryland
University of Massachusetts
University of New Hampshire
University of Vermont
U. S. Office of Education
West Virginia University

New York State College of Agriculture
Cornell University
Ithaca, New York

November 5, 6 & 7, 1963

PROGRAM PLANNING COMMITTEE

Harold R. Cushman, New York, Chairman
Glenn Z. Stevens, Pennsylvania, Research Committee
Clodus R. Smith, Maryland, Research Committee
William H. Annis, New Hampshire, Professional Information Com.
William E. Drake, New York, Professional Relations Committee
Bruce A. Gaylord, Vermont, Teacher Education Committee
Ralph C. S. Sutliff, New York, Standards and Policies Committee
Joe P. Bail, New York, Cornell University
Duane M. Nielsen, U. S. Office of Education, Research and Teacher Education Specialist
H. N. Hunsicker, U. S. Office of Education, Program Specialist

CONFERENCE SECRETARY

William E. Drake, Assistant Professor, Agricultural Education, Cornell University

CONFERENCE CHAIRMAN

Harold R. Cushman, Associate Professor, Agricultural Education, Cornell University

North Atlantic Regional Research Conference

Preface

This publication reports significant speeches, current research, and committee work conducted during the 1968 Annual Research Conference for Teacher Educators, Supervisory Staff Members, Teachers of Agriculture and Graduate Students in Agricultural Education from the North Atlantic Region.

The conference proceedings are organized in five sections, each reporting one of the five general sessions conducted during the three-day conference. The first section includes a "Progress Report of State Studies in Non-Farm Agricultural Occupations" by Robert E. Taylor.. This section also includes reports of research in off-farm agricultural occupations presently being conducted in certain states of the North Atlantic Region.

The second and third sections report the general sessions of the conference devoted to research design. These sections include a digest of the presentation entitled "Designing Research in Education" by David R. Krathwohl. Also included in this section is Dr. Krathwohl's "Suggestions for the Preparation of Educational Research Proposals."

Section four presents the research proposals which were the subjects of study for the various work groups. This section also lists the membership of the respective workshop groups.

Critiques of research proposals are reported in section five, which includes the work group committee reports.

The last section of the proceedings is devoted to speeches by L. B. Darrah, C. W. Hill and Duane M. Nielsen pertaining to research experiences, the National Center for Advanced Study and Research, and implications of the non-farm agricultural occupations studies, respectively.

The conference proceedings should prove to be a valuable reference in planning meaningful research and writing research proposals to be submitted for funding. The information included herein is relevant, recent and provocative in its application to the current research needs in agricultural education.

William E. Drake
Conference Secretary

TABLE OF CONTENTS

	Page
Preface	iii
Conference Participants	1
First General Session	3
Welcome to Cornell - Dr. Marvin D. Glock	3
Preview of Conference Program - Harold R. Cushman	3
Progress Report of State Studies in Non-Farm Agricultural Occupations - Robert E. Taylor	3
Individual State Reports	6
Non-Farm Agricultural Occupations for Which Training May Be Provided by Vocational Education in Agriculture - Claude McGhee	6
Technical Education Needs of Persons Engaged in Agricultural Occupations - David R. McClay	8
Progress Report on Surveys in New York State to Determine Employment Opportunities and Competencies Needed in Agricultural Occupations Off-the-Farm - Joe P. Bail	11
Second General Session	13
Designing Research in Education - Dr. David R. Krathwohl	13
Third General Session	17
Designing Research in Education - Dr. David R. Krathwohl	17
Suggestions for the Preparation of Educational Research Proposals - Dr. David R. Krathwohl	18
Fourth General Session	27
Instruction of Work Groups - Harold R. Cushman	27
Members of Work Groups and Research Topics Studied	27
Fifth General Session	28
Critique of Research Reports and Proposals	28
Work Group Committee Reports	28
Group I - Daniel Koble	28
Group II - Homer Judge	29
Group III - Gene M. Love	31
Group IV - Harold L. Noakes	32
Group V - Virgil E. Christensen	33

	Page
Sixth General Session	35
Research Experiences - Dr. Lawrence B. Darrah	35
Our National Center for Advanced Study and Research in Agricultural Education - C. W. Hill	41
Research Implications of the Study of Employment Opportunities and Needed Competencies in Non-Farm Agricultural Occupations - Duane M. Nielsen	43
Distribution of Material - Glenn Z. Stevens	44

CONFERENCE PARTICIPANTS

Cornell University	
Muhsin Al-Salman	Graduate Student
John Babel, Jr.	Graduate Student
Joe P. Bail	Teacher Education
James Becket	Graduate Student
Virgil Christensen	Teacher Education
David Craig	Graduate Student
Harold R. Cushman	Teacher Education
Lawrence B. Darrah	Marketing & Agr. Econ.
William E. Drake	Teacher Education
Marvin D. Glock	Acting Dean, School of Ed.
J. Alex Hash	Graduate Student
C. W. Hill	Teacher Education
Leon Johnson	Graduate Student
Gideon Katz	Graduate Student
Makonnen Kebret	Graduate Student
Esau McCaskill	Graduate Student
Jason Millman	Ed. Psych. & Meas.
Frank Pearce	Graduate Student
Alfred Renzelman	Graduate Student
Agu Sioba	Graduate Student
Douglas C. Towne	Graduate Student
Delaware State Education Department	
Dan E. Koble	State Supervisor
Michigan State University	
David R. Krathwohl	Research Coordinator
New York State Education Department	
Harold L. Noakes	Assoc. in Agr. Educ.
Alan Robertson	Assoc. in Agr. Educ.
Frank J. Wolff	Assoc. in Agr. Educ.
Pennsylvania State University	
Earl V. Allgood	Graduate Student
Frank Anthony	Teacher Education
Robert A. Campbell	Res. Spec., Voc. Educ.
Edwin Love	Graduate Student
Gene W. Love	Teacher Education
David R. McClay	Teacher Education
Glenn Z. Stevens	Teacher Education
Pennsylvania State Education Department	
David R. Shantz	Area Supervisor
Rutgers University	
William H. Evans	State Supv. & Teacher Ed.
The Ohio State University	
Robert E. Taylor	Dir. of National Center

University of Delaware
Ralph P. Barwick..... Teacher Education

University of Maryland
Howard P. Addison..... Teacher Education

University of Massachusetts
Homer V. Judge..... Teacher Education

University of New Hampshire
William H. Annis..... Teacher Education
Paul A. Gilman..... Teacher Education

University of Vermont
Bruce A. Gaylord..... Teacher Education

U. S. Office of Education
Duane Nielsen..... Spec. in Teacher Educ.

West Virginia University
Robert V. Kerwood..... Teacher Education
Claude McGhee..... Teacher Education

Guests from Cornell University
Frank D. Alexander..... Office of Ext. Studies
Robert L. Bruce..... Extension Education
Phil Johnson..... Science Education
Fred Lechner..... Agr. Engineering
J. W. Longest..... Office of Ext. Studies
A. G. Nelson..... Counselor Education
Helen Nelson..... Home Economics Educ.
Thomas Watkins..... Dir. of Resident Instruction

CONFERENCE PROCEEDINGS

First General Session - November 5, 1963

Chairman: Joe P. Bail Secretary: William H. Annis

The North Atlantic Regional Research Conference was called to order at 9 a. m. by Joe P. Bail of New York. William H. Annis of New Hampshire served as secretary for the first day of the conference.

Dr. Marvin D. Glock, Acting Dean, School of Education, Cornell University, welcomed the group to Cornell.

Dr. Harold R. Cushman, Program Chairman, reviewed the conference program with the group. He stated that the conference theme was to be research concerning non-farm agricultural occupations.

PROGRESS REPORT OF STATE STUDIES IN NON-FARM AGRICULTURAL OCCUPATIONS

Robert E. Taylor, Director
The National Center for Advanced Study and Research

Digest of Presentation

I. Status of Agricultural Occupations Studies - United States

A. Massachusetts, New Jersey, North Dakota and Vermont have reported no plans.

B. Alabama, Arizona, Florida, Louisiana, Michigan, Minnesota, Mississippi, Montana, New Hampshire, New Mexico, Tennessee, Texas and Utah have studies planned.

C. The following states have studies underway: California, Georgia, Indiana, Iowa, Kentucky (2)*, Michigan, Missouri, Nebraska, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Virginia, Washington, and West Virginia.

D. Studies have been completed in Colorado, Illinois, Indiana, Kansas, Maryland (2), Michigan (2), and North Carolina (3).

E. Reports are available of the previous completed studies with the exception of Illinois and Kansas.

F. Thirty-two states are actively involved in a total of 45 studies.

* The numbers in parentheses indicate the number of studies in that particular state.

II. Person Conducting the Studies

A. Primary responsibility

1. State Supervisory Staff..... 3
2. Teacher Education Staff..... 9
3. Joint Staffs..... 9
4. Graduate Students.....13
5. Others with some duplication.....10

B. Cooperators include

1. Colleges of Agriculture
2. Experiment Stations
3. State unemployment compensation commissions
4. Area schools
5. Local districts
6. Industrial education centers
7. State-wide agricultural conferences
8. Teachers of vocational agriculture
9. State departments of education
10. Other vocational services

III. How Studies Are Being Financed

A. Primary sources

1. State board for vocational education.....15
2. University..... 7
3. Graduate Students..... 4
4. Others..... 11

B. Others sharing in financing

1. Colleges of Agriculture
2. Experiment Stations
3. State unemployment compensation commissions
4. Title III and VIII, N. D. E. A.
5. Area schools - industrial education centers - junior colleges
6. Local districts
7. Graduate assistantships

IV. Phases of the Program for Which Studies Have Major Implications

A, The phases of the program primarily affected include:

1. High school..... 18
2. Young farmer..... 3
3. Adult farmer..... 2
4. Agricultural technician training..... 13
5. Post high school 5

B. Others, including area schools and miscellaneous..... 5

V. Sources of Data

A. Respondents

1. Employers..... 26
2. Employees..... 1
3. Others, including jury of experts and former students..... 2

B. How selected

1. Random (approximately one-half)
2. Entire student universe (limited geographical area or based on known agricultural businesses)

C. Geographical areas included

1. State..... 14
2. Economic areas (several counties)..... 13
3. County..... 2
4. School district..... 6

VI. How Will Data Be Collected

A. Mail surveys..... 10

B. Interviews..... 26

C. Other..... 3

VII. Data Available from the Studies

A. Identifcation of occupations for which knowledge of agriculture is desirable..... 28

B. Present number of employees in above categories..... 29

C. Annual turnover and entry opportunities in these occupations.. 23

D. Beginning salary levels..... 20

E. General requirements, agricultural, and other competencies needed for entry and advancement

1. Level of competency (e.g., semi-skilled, skilled, technical)..... 24
2. Preferred minimum formal education..... 25
3. Preferred minimum experience..... 20
4. Minimum age for entry..... 18
5. Preferred residential background..... 14
6. Labor laws and union regulations..... 12
7. Licensing and certification..... 8

Individual State Reports

Reporter: Claude McGhee, Assistant Professor, Agricultural Education, West Virginia University. "Non-Farm Agricultural Occupations for Which Training May Be Provided by Vocational Education in Agriculture." The report was as follows:

The aim of the study is to determine the scope and extent of non-farm employment in agriculture and to identify some occupations or occupational areas for which training programs could be implemented on the high school and post-high school levels which would provide skills contributing to successful entrance into certain of these occupations.

Specific Objectives:

1. To conduct a census of firms, businesses, industries, agencies, and organizations with employees who are required to possess agricultural competencies.

2. To interview these firms, businesses, etc., to determine the number of employees in various job classifications as well as some of the basic requirements for entering each occupation.

3. To identify some occupations or occupational areas for which training programs could be implemented on high school and post-high school levels which would contribute to successful entrance into certain of these occupations.

Universe of Study:

The total occupational spectrum of the State constitutes the universe of the study. This is desirable because errors of sampling can be avoided and useful data will be provided at both the state and local levels. This universe was possible because:

1. The sparseness of agricultural industries and the limited number of non-farm agricultural occupations enable a comprehensive study.
   (a) State population 1,800,000
   (b) Limited number of commercial farms 12,609
   (c) Estimated number of non-farm agricultural occup. 15,000

2. Teachers of vocational agriculture are available and are willing to assist in the collection of the necessary data.

Definition:

Agricultural Occupation: An occupation in which the worker needs competencies in one or more of the primary areas of plant science, animal science, soil science, agricultural mechanization, and agricultural business management.

Assumptions:

1. Teachers of vocational agriculture will make valid identifications of the non-farm agricultural occupations in their respective counties.

2. Data collected by interviews conducted by the 116 teachers of vocational educators, after suitable instruction, will be uniformly valid.

3. The identity of the non-farm agricultural occupations is basic to vocational agriculture.

Procedures:

1. An instrument was prepared to structure the collection of data by interview.

2. Teachers of vocational agriculture and other agricultural educators will compile a listing of all firms, businesses, industries, agencies, organizations, and persons to be interviewed.

3. Data will be collected by interviews with employer representative having responsibility for the personnel of the business.

4. Teachers of vocational agriculture will serve as interviewers in 46 of the 55 counties. Arrangements have been made for some teachers of sparsely populated areas to assist in the more populous areas. A teacher of vocational agriculture in each of the 46 counties has been designated as county chairman to coordinate the county study.
   (a) Nine district training sessions on the principles, procedures, and methods of interviewing were held prior to the collection of data.

5. Data from the nine counties not served by vocational agriculture will be gathered by the supervisory and teacher training staffs and mid-year graduates in agricultural education.

Anticipated Time and Event Sequence Schedule of the Study:

Order of Events	Date
1. Approval of study and development of preliminary plans by State staff	Completed
2. Preliminary approach to teachers of vocational agriculture concerning development of study	Completed
3. Development of interview instrument and handbook for interviewing	Completed
4. Definition and description of study with teachers at Annual Vo-Ag Teachers Conference	August 8

Order of Events	Date
5. Workshops for training teacher-interview personnel	September 12-23
6. Pilot interview program - 3 counties	October 1-15
7. Period of statewide survey	November 1 - January 31
8. Development of procedure for organizing, tabulating, and analyzing data	November
9. Computation of machine tabulation of data	March 1
10. Preparation of research report	March - April
11. Completion of report	May 15

IIIIII

Reporter: David R. McClay, Head, Department of Agricultural Education, Pennsylvania State University. "Technical Education Needs of Persons Engaged in Agricultural Occupations." The report appears below:

Objectives:

1. To identify agricultural occupations and job titles in Pennsylvania and to estimate present numbers of employees and annual entry opportunities.

2. To list competencies needed for entry and advancement and to determine job characteristics such as salary, minimum age, labor law and union restrictions, required education and experience, licensing and certification.

3. To group occupations and job titles for which there are common technical education needs.

Reasons for Undertaking the Work:

Changes in the agricultural industry during the past decade have resulted in new opportunities for employment in a wide range of agricultural occupations. The occupational areas, the number of persons employed in them, and the agricultural competencies needed should be determined in order to provide guidance in establishment of technical education programs.

Education for A Changing World of Work (4), the summary report of the Panel of Consultants on Vocational Education, points to the need for vocational and technical education for some 80 per cent of our youth during the present decade. The report states, "The vocational agriculture program, under Federal reimbursement, should be broadened to include instruction and increased emphasis on management, finance, farm mechanization,

conservation, forestry, transportation, processing, marketing the products of the farm, and other similar topics." To attain the broad objectives stated by the Panel of Consultants on Vocational Education, occupations and specific job titles in the agricultural industry must be identified.

The needs for knowledge, skill, and the ability to make decisions become the basis for the subject matter content of technical education courses that enroll persons preparing for or engaged in each of the agricultural occupation groups. Competencies specific to a job title may be taught individually in a supervised cooperative education (on-the-job training) program.

The attainment of the objectives in this study should facilitiate (1) the writing of job descriptions, (2) the clustering of jobs into training categories, (3) the structuring of course outlines and curricula, and (4) the testing of experimental programs in a search for administratively feasible ways of offering the courses.

Previous Work and Present Outlook:

Agricultural occupation studies have been completed in North Carolina (1), Washington (2), California (5, 7), and New York (8). Cameron (3) surveyed Huntingdon County in Pennsylvania. The studies show increasing employment opportunities in agricultural occupations other than farming. They also indicate the importance of some farm experience for success in these occupations and that there are minimums of agricultural competence for entry. Many agricultural jobs require post-high school technical education. There is demand for specialized knowledge in agricultural science, in business, and in mechanics.

A Research Coordination Conference on Agricultural Occupations (6) developed interview schedules based on studies in progress in Illinois, Kansas, Ohio and New York. Revised versions of the schedules have aided in the design of this investigation.

Literature Cited

1. Blackmon, J. H., Dawson, C. G. Need for Training for Non-Farming Agricultural Occupations. Department of Public Instruction, Raleigh, North Carolina. 1961.
2. Brown, B. L. Training Needs of Workers in Business Associated with Agriculture. State Board for Vocational Education, Olympia, Washington. 1959.
3. Cameron, H. L. Present and Potential Off-Farm Agricultural Occupations and Training Needed for These Occupations by Vocational Agriculture Graduates in Huntingdon County, Pennsylvania. M. Ed. Research Study. Library, The Pennsylvania State University. 1962.
4. Education for A Changing World of Work. OE-80021. Washington: Government Printing Office. 1963.
5. Halterman, J. J. Technicians in Agriculture. State Department of Education, Sacramento, California. 1962.

6. Report of Research Coordination Conference on Agricultural Occupations. The Ohio State University, Columbus, Ohio. 1963.
7. Sutherland, S. S., Thompson, O. E. Training Required by Workers in Agricultural Business and Industry. State Department of Education, Sacramento, California. 1957.
8. Tom, F. K. T., Hill, C. W., Greene, K. L. Employment Opportunities in Certain Occupations Related to Farming in the Syracuse, New York, Economic Area. Rural Education Department, Cornell University, Ithaca, New York. 1961.

Procedure:

Agricultural occupations may be defined as those in which workers need competencies in one or more of the primary areas of plant science, animal science, agricultural business management and marketing, and agricultural mechanization. Needs for technical education are expected to emerge from the developmental sequence of the study design as follows:

1. Lists of businesses and services will be obtained from the Bureau of Employment Security, Department of Labor, and from the Division of Sales and Use Tax, Department of Revenue. Persons in government and in professions are on available lists. The Agricultural Stablization and Conservation Service has the names of farmers. The Standard Industrial Classification Manual will be used to aid a committee of business and professional leaders in each selected county in establishing random samples of owners and managers to be interviewed.

2. Two interview schedules, pre-tested in a pilot study of Snyder County in 1963, will be used. Form I obtains general information about the business or service and lists levels of employment and specific job titles for employees needing agricultural competencies. Form II provides for detailed job characteristics and a checking of structured lists of specific competencies.

3. The data schedules are designed to be summarized in ways that will discover technical education needs common to groups of occupations and job titles, thus contributing to efficient scheduling of courses and utilization of staff and facilities.

Probable Duration:

Three years.

Financial Support:

Estimated annual expense

State, Smith-Hughes and George Barden Funds	
Salaries	$7362
Maintenance	550

Dept. of Public Instruction
NDEA, Title VIII funds

Salaries	$3136
Maintenance	3914

Personnel:

N. K. Hoover, D. R. McClay, G. L. Stevens

Advisory Committee:

H. J. Bonser, R. C. Bealer

Institutional Units Involved:

Department of Agricultural Education

Cooperation:

Commonwealth of Pennsylvania,
Department of Public Instruction

Approved by Pennsylvania Agricultural Experiment Station:

M. A. Farrell, Director November, 1963

IIIIII

Reporter: Joe P. Bail, Chairman, Agricultural Education Division, Cornell University. "Progress Report on Surveys in New York State to Determine Employment Opportunities and Competencies Needed in Agricultural Occupations Off-the-Farm." The report is as follows:

Mr. Chairman, and Members of the North Atlantic Regional Research Conference in Agricultural Education: We have been asked to share our experience with you on this subject. As many of you are aware, this particular subject is of paramount importance to us at this time in agricultural education. With the expansion of vocational and technical education in the offing, it is imperative that we become better informed of the need for trained workers in agriculture. Since the Census of Agriculture gives a rather comprehensive report on farming, we are assuming that this data (i.e., Census Data) will suffice for determining employment opportunities in the basic part of agriculture - farming. However, as you well know, facts and figures regarding employment opportunities in agricultural occupations off-the-farm are largely guestimates - varying from 15 to 40% of our total work force. A recent example of this is the report in the September-October issue of Better Crops with Plant Food which cites the following employment figures:

Farm Production	- 3,700,000 farmers
Farm Production Supply Service	- 5,600,000 employees
Processing of Agricultural Products	- 3,000,000 employees
Wholesaling of Agricultural Products	- 1,000,000 employees
Retailing of Agricultural Products	- 3,000,000 employees
TOTAL	-16,300,000

I'm not quarreling with these figures - perhaps they are too low or maybe too high - but I'm sure that it would be difficult to substantiate many of them. This then, seems to me, to be a primary purpose of our surveys, "to secure more factual figures regarding employment in agricultural occupations, particularly those not concerned with actual production of agricultural products."

Let me review with you the kinds of information and the methods in which we hope to secure it. These activities are being carried out by members of our Joint Staff, by teachers of agriculture, and by others.

Kinds of Information. By now the form being used to collect some of these data is well known to you. It has been labeled Part A or Form A in most cases. Basically, it calls for the collection of data from any company, business, agency, or organization which is engaged in any way with an agricultural product from the time it leaves the producer to the time it gets to the consumer, including all the related services along the way. In addition, it calls for a listing of the total number of employees needing competencies in agriculture plus a breakdown of titles and a classification of the level of employment.

The second type of information relates to the actual competencies needed by specific occupational titles. This has generally been labeled Form B. This section, I'm sure, will vary considerably from one part of the country to another, although there will still be many common elements in it. At the present time our efforts are primarily focused on Form A - Employment Opportunities. However, we are using Form B in some pilot surveys in order to refine it.

Methods of Securing Information. Since our state is large in geographic area as well as population and number of businesses, we have had to make certain decisions regarding the scope and method of collecting data. In general, our survey cannot be called a state-wide one. We will be contacting some agencies, businesses, etc., on a state-wide basis but a complete state survey would not, in our opinion, be feasible. Let me indicate to you then our manner of approaching this problem.

1. Some surveys will be conducted on a school district basis in which a complete census will be carried out. Two such surveys have been completed with at least two others in the planning stage.

2. Some surveys will be conducted on a county basis, either a complete census or a sampling. One such study is complete with two others underway.

3. Some surveys of specialized businesses or concerns will be made. One such survey of agricultural machinery and major farm equipment dealers is practically complete. Another regarding employment opportunities in ornamental horticulture, greenhouses, etc., is planned.

4. Selected surveys of state-wide businesses, concerns, or agencies will be made. These include agricultural cooperatives, governmental agencies, association lists, etc. A somewhat modified Form A will be used which is more concise. These surveys are underway.

5. A resume of employment in selected fields of agriculture, based upon the 1960 Census of Population for New York, has been completed. These data will be useful in interpreting certain aspects of our findings.

6. A series of studies are underway throughout the state to determine the need for vocational and technical education. Each survey group has been supplied with copies of Form A and are being urged to use it in conducting their studies. Other information from these surveys, particularly regarding student interest in enrolling in courses in agriculture, will be useful to us.

7. Studies already completed have been reviewed for implications in this work. An example of this is the Hatch Project conducted by Professors Tom and Hill of our staff along with Mr. Green, a research assistant. (Syracuse Economic Area - Employment Opportunities in Selected Agricultural Occupations, 1961).

As you can see, we will need to pull these studies together to make inferences for the state. We feel that these surveys and studies will provide us with much meaningful data which can be used to project employment opportunities in agriculture for the off-farm segment. When added to the employment opportunities on the farm, we should have more realistic facts on which to base present or proposed programs in agricultural education.

Second General Session - November 5, 1963

The conference reconvened at 1:16 p.m. Chairman Bail introduced Dr. David R. Krathwohl who directed the program for the second session.

DESIGNING RESEARCH IN EDUCATION

David R. Krathwohl, Research Coordinator,
Bureau of Educational Research, Michigan State University

Digest of Presentation

A. The purpose of research: A way of gaining knowledge (it is not, however, the only way).

B. The Goals of research

1. Prediction and Control
2. Theory building - "where we want to go"
   (a) There is a lack of theory in much educational research
   (b) Theory is built by inductive reasoning
   (c) Theory building requires knowledge of variables and how these variables interact
   (d) Theory development is essential to prediction and control

C. The formation of theory.

1. May come first from inductive observation
2. From this, one builds up hunches and hypotheses for testing
3. The question then becomes, when is a theory proven?
   (a) Often "proof" is based on past experience, opinions of authorities, or evidence of some sort
   (b) A highly useful kind of evidence comes from a "chain of reasoning" which is a good argument, this is what research consists of
   (c) IT IS NEVER ABSOLUTELY PROVEN
   (d) Proof is more a matter of intuitive or value judgement. Science is always testing theories
   (e) A theory is accepted only when, and as long as, it escapes disconfirmation by research and experimentation
4. Research helps people make inductive leaps. These tend to make the vast advances, rather than research itself

D. Research is building a chain of argumentation

1. The chain should be as strong as possible
2. Most links are a compromise between what is realistically possible and an ideal that would eliminate alternative causes of the phenomonon being observed
3. The starting point is a hunch or hypothesis
4. One may contrast two methods of attack: our usual every day problem solving and experimentation
5. The problem solving chain looks like this:
   (a) You must decide who you will look at
   (b) You must decide where you will look
   (c) You must decide what you will look for
   (d) You then verbally describe it and logically reason through to arrive at an interpretation
6. In experimentation the same steps are present: the relation of your hunch or hypothesis to your observations
   (a) The who becomes the sample
   (b) The where becomes experimental design
   (c) The what becomes the measures, instruments, check lists. These are operational definitions of the variables in the hypothesis
   (d) The descriptions are numerical rather than verbal, and the logic applied to the data is statistical; the interpretation is based on statistical inference
7. Both problem solving and experimentation are chains of argumentation which should be built so as to eliminate as many rival hypotheses as possible
   (a) Problem solving usually involves verbal descriptions, experimentation, numerical descriptions
   (b) A more precise description is obtainable through numerical abstraction if the measuring scales are valid

E. Formulating hypotheses.

1. These can be stated as if ... then statements
2. In this form the "if" factor is the independent variable, "then" factor dependent variable
3. A hypothesis should be based upon:
   (a) A theory or model of how a set of variables interact
   (b) A rationale which suggests some reasons for the expulation
   (c) The findings in the literature which bear on the problem
4. A hypothesis should be simple and clear
5. A hypothesis should be testable
6. It is not necessary to state a hypothesis in the null form in the proposal, people want to know what you expect to find
7. A hypothesis should be made before the data is in and tabulated. However, if the analysis suggests a new hypothesis, inform the reader how it was formulated.
8. A hypotheses about what "ought to be" or "should be" cannot be proven, all research can do is to show the implications of particular value positions.

F. Operational definitions.

1. These are involved in making a hypothesis clear and testable
2. They are behavioral descriptions of the phenomena to be observed
3. You must tell what operations you are using to measure the behavior, feeling, etc.

1st example: morale. This is only observed as overt behavior. An operational definition explicitly tells what behavior you intend to observe which will be used to define high and low morale. Included is a description of the manner of observation.

2nd example: an intelligence test describes the behavior which is defined as intelligence.

G. The Abstraction Ladder

1. An example would start with Bess, the cow, at the lowest level of abstraction and go through cows, bovine, mammals, animals to organisms at the highest level of abstraction
2. Research is rarely concerned with Bess
3. Operational definitions must be used to specify the exact location of the study on the abstraction ladder
4. The abstraction ladder can be interpreted in verbal or statistical terms

H. Sampling (A means of inference from parts to the whole).

1. Size is one aspect. Homogeneous populations require smaller samples than heterogeneous populations
2. The size of homogeneity of the sample determine sensitivity and precision. The "correct" size of sample will allow you to sense a difference of "appropriate" size and determine effectiveness of treatment effect. The magic formula for determining "correct" size requires pilot studies or the use of other studies done previously to determine the variability of the phenomena one is dealing with.

I. Sampling Plans.

1. Random Sampling
   (a) Randomization is necessary at some stage in order to get probabilities
   (b) Each unit must have an equal chance of being drawn
   (c) Units must be defined
   (d) Units should relate to hypotheses
   (e) The population must be defined and is the population to which you wish to generalize
2. Stratified Random Sampling
   (a) Divide one population into categories according to an independent variable to increase homogeneity
   (b) Because of increased homogeneity, sample size can be reduced, a size maintained and sample variability will be reduced
   (c) One may adjust size within each strata to variability within each strata. Example: in political stratification, a larger sample would be drawn from the Independent group than from the Democratic group or the Republican group because the latter are usually more homogeneous
3. Area Sampling
   (a) Used in geographic studies
   (b) Reduces cost of sampling
4. Sequential Sampling
   (a) Rarely used in educational research, but it can be used when resampling is easy
   (b) Take a sample, then take another and compare. Continue to take others until the results are within previously established tolerance limits
5. Quota Sampling
   (a) Not a random sampling process therefore, one cannot compute probabilities with any certainty
   (b) The characteristics of the sample are in the same proportion as they are in the population
6. Panels
   (a) Again, no randomization
   (b) A panel or group of people used as a basis for data are so chosen as to be representative of the population

J. Measures - Operational Definitions. These must be consistent with the hypotheses and theory and must have:

1. Reliability
   (a) Internal consistency - do the items measure the same thing (total score is similar to sum of score on two halves)
   (b) Stability - the instrument must give a stable reading over time
   (c) Equivalence - Forms A and B must be equivalent
   (d) Stability and Equivalence - b and c acting together
2. Validity
   (a) Predictive: the degree to which the scores correlate with a criterion obtained at an appropriate future date
   (b) Concurrent: correlation of scores with criterion measured at the same time
   (c) Construct: demonstrates that the test acts as one would predict in terms of its theoretical bases
   (d) Content (face): the test contains items that appear to be appropriate
3. Objectivity
   (a) Persons analyzing the data substantially agree on its interpretation
4. Objectivity and reliability are necessary for validity, but they are not sufficient. Validity is the most critical

Third General Session - November 6, 1963

Chairman: Bruce A. Gaylord Secretary: Howard Addison

The third session of the conference was convened at 8:30 a. m. with Bruce Gaylord presiding.

Dr. David Krathwohl continued the discussion of the previous session on Designing Research in Education. Following the pattern of the previous day, he began by answering questions submitted by participants.

Digest of Presentation (continued)

K. Experimental Design

1. This is where - under what conditions
2. You want a maximum treatment effect to show up over other effects
3. The above must be done with the most efficient use of subjects
4. One can control unwanted variables (rival hypotheses) by masking, elimination, counter balancing, or statistical correction
5. Rival hypotheses that need to be taken into consideration
   (a) History - the events which take place between pre-test and post-test which might effect the dependent variable
   (b) Maturation - biological and psychological changes which occur over time
   (c) Testing - practice effect, test "wiseness"

(d) Instrumentation - another term is instrument decay. This is the change in the instrument over time (bored observers, more expert interviewers, biased interviewers over time, etc.)
(e) Regression - a natural phenomenon when only the high group and the low group from the pre-test are used in the post-test. This is a function of use of extreme groups and the imperfect correlation between the selection measured and the dependent variable
(f) Selection - the use of volunteers or some other non-representative group
(g) Mortality - selective drop-out-non-respondents

6. Interactions of rival hypotheses
(a) History and Treatment - a certain event may make the treatment "take" better
(b) Instrumentation and Treatment - the observer may know which group is which and look for different things
(c) Testing and Treatment - the pre-test may alert the students to what is important, therefore, they are more attentive to certain aspects
(d) Selection and Treatment - the school which allows you to do the study may be doing so because your treatment fits their program. Here your treatment effect may seem greater
(e) Reactive Arrangment - artificial arrangements and Hawthorne effect. The subjects feel "special" and therefore, try harder
(f) Multiple Treatment - the first treatment may have a beneficial effect on second

For a more complete discussion of the above rival hypotheses and for the designs outlined, see the section by Donald T. Campbell and Julian C. Stanley, "Experimental and Quasi-Experimental Design for Research on Teaching," in Handbook of Research on Teaching, N. L. Gage, editor, Rand McNally and Company, Chicago, 1963.

Dr. Krathwohl discussed the material included in his "Suggestions for the Preparation of Educational Research Proposals." A copy of this checklist appears below:

SUGGESTIONS FOR THE PREPARATION OF EDUCATIONAL RESEARCH MATERIALS *

David R. Krathwohl - Michigan State University

Does your research proposal show off its true potential? Check each section of your proposal against the following points --

Problem Statement - In this section, you explain your problem and its significance to the field of education.

* A checklist with special relevance for USOE Cooperative Research Program proposals, but also useful as a general check on any proposal.

1. Does your problem statement convince the reviewer of the importance of the proposal? Cite one or two concrete consequences. Indicate the way it builds on previous theory or contributes to new theory.

2. Is it so written that its problem falls within the scope of the program of the granting agency? For the USOE Cooperative Program, are its implications for human learning, preferably school learning, made evident?

3. Have you drawn a clear ring around your problem so it is clear what you plan to include and what leave out? Don't make your problem statement so broad you are going to solve the world's ills.

4. Does it communicate to the intelligent professional who is not a specialist in your field?

5. Is your statement so written that the hasty reader is signaled by topic paragraph sentences, underlining or other devices where to find a succinct statement of the purpose of your research?

6. Have you briefly indicated the approach you plan to use?

Related Research - Summarize the most pertinent related research, referring to the relationship between it and your study in such a way that you demonstrate your mastery of the field and that the manner in which it is a new contribution is made clear. Inclusion of the theoretical base of the study is important. It suggests a context for the research and provides a rationale.

1. This is your chance to show your scholarship. Have you carefully selected those materials which most directly bear on the problem?

2. Have you summarized these in such a way that you communicate to the intelligent non-specialist how they contribute to lay a foundation for your research? Don't expect him to read the references and don't expect him to go out and hunt them down to understand your proposal.

3. Have you critically reviewed these studies and hinted at (but not explained here in detail) how you will avoid their flaws?

4. Have you included studies that are on-going and indicated how you will mesh your study with these or how your study has a unique niche?

5. Studies which have a theoretical base have the greatest generality of use and application. If there is a theoretical base for your study, have you described it and clearly indicated its relation to the problem? Can you show how your study tests the theory or contributes to its extension in some way?

6. You can't find literature bearing on your problem? Don't say so without indicating how you conducted your search, what you looked at, headings searched, etc. It sometimes helps to indicate the closest studies that were found, and show how they fall short if it is not self-evident. Statements to the effect that you are starting de novo and nobody has ever done anything related to your study are viewod with suspicion by reviewers. Have you indicated how you have made a scholarly attempt to find your precoursers in the field?

7. The most common error in the treatment of this section is trying to impress the readers with a lengthy bibliography that includes everything but not doing enough with each reference to show how it contributes. Remember a competent graduate student can compile a bibliography, but only a scholar can integrate and weave the references into a supporting rationale for a study.

Objectives - Here in very specific form you are asked to indicate your objectives, your hypotheses, the questions you intend to answer. The relation of this section to the problem statement must be made clear. This section often forms a basis for judging the rest of the proposal, so it is critical that the things you intend to do in Procedure are reflected in the hypotheses to be tested and vice-versa.

1. Do the hypotheses or questions clearly flow from the problem statement or have you provided material which makes this relation clear?

2. Have you flagged your objectives clearly so the reviewer can find them readily? Listing them in order of importance or potential contribution is a good idea.

3. Have you shown their relation to underlying theory if this is not self-evident to the intelligent non-specialist? If you have not yet laid your theoretical base, be sure to do so here if there is such a base.

4. Do you have clean-cut specific, achievable objectives that lend themselves to operational definitions? (You'll discuss the operations which define the terms of your hypotheses in the section for instrumentation under Procedure.)

5. Are these statements consistent with the Procedure section? Do you claim more here than your procedures will support? Are there aspects of your procedure and your analysis that are not reflected here?

6. Are the hypotheses and questions testable? Have you separated value judgements which may have crept into your treatment of the problem from the researchable questions which your data can answer?

7. Are the hypotheses stated in a form which indicates what you expect to happen? Statements in the null form make it difficult to tie the hypotheses to the theory and background you have developed. They also give an amateurish impression to the reader.

Procedures - This tends to be one of the most carefully read parts of the proposal. Here the chips are down. In glowing terms and appealing generalities you have so far tried to persuade the reader that what you intend to do is worth while. Describing your procedural steps in detail brings your project down to earth in operational terms. The section consists of: (a) the general design, (b) population and sample, (c) data and instrumentation, (d) analysis, and (e) time schedule.

(a) General design - Your design indicates how you will structure your situation so that you can gather data which will most economically and efficiently use your subjects and which will permit whatever effect you want to observe to be maximally effective, sensed and measured; contaminating variables either are controlled or the experimental effect compensated for their action.

(1) If you have not done so previously, have you precisely indicated which are the variables that will produce the experimental effect (independent variables), and indicated equally clearly what the experimental effect (dependent variables) will be? Delineate also the variables which might affect the dependent variable but which are considered contaminating variables. (i.e., what other variable might have produced the experimental results if we didn't control them?)

(2) If the independent variables are to be manipulated in experimental fashion, have you indicated how this will be done? If different levels of treatment effect will be used, indicate these and tell (a) why these levels were chosen, and (b) how they will be monitored to be sure that the levels of treatment are obtained. (e.g., how did you decide to use reading books at particular levels of difficulty and how will you know that the readers do have that level of difficulty?)

(3) Are all your hypotheses accounted for in your design plans? Are all aspects of your design plans adequately covered by the hypotheses and objectives statements?

(4) Have you indicated how you expect to control those variables which might otherwise be interpreted as causing the experimental result? Indicate the means of control for each of the variables and how it fits your design (randomization, counter-balancing, masking, etc.).

(5) You cannot possibly control all possible contaminating factors. Every design is a compromise. It is important that you indicate the nature of the particular compromise that you have chosen, pointing out why you chose to control the variables you did, and

why you let others go. The latter is as important as the former, since this indicates that the lack of control of these variables are not an oversight, but an intentional act. Have you laid this out so the reader can judge the basis on which you made your compromise?

(6) Have you avoided expediency as a reason for leaving a variable uncontrolled unless it is judged as an unimportant variable?

(7) If cost is a factor in the control problem, have you prepared an option in the budget indicating what it will cost additionally to control potentially important factors?

(8) Re-read your design presentation. Have you presented the most convincing case you can that the particular compromise you chose had a rational, realistic base that takes into account previous experience with flaws in design of similar research? Here are some frequent errors. (Not all apply to all designs, obviously). Did you -- provide for a control group if one is needed?
-- take into account the Hawthorne effect?
-- look for practice effect in testing?
-- remember to look for a possible regression effect?
-- choose your under and over achievers correctly?
-- look for factors resulting in biased assignments to the experimental and control group?
-- provide for cross-validation of all multiple correlation results?
-- look for potential selective loss of cases?
-- look for the effect of pre-testing subject?
-- watch for growth or maturation effects in a long-term study?
-- make sure that the control group is given all treatment but the experimental one?

The above are only suggestive. This part of the check-list could be as long as a book. -- In fact, consult one if in doubt.

(b) Population and sample - Describe here the group from which you will sample, how your subjects will be drawn and the rationale for the selection method. Indicate what controls by stratification or other means you will employ in sampling. Indicate the method by which individuals will be assigned to any groups involved in the study, and the rationale for the assignment method.

(1) The description of population from which you choose your sample is an operational statement of the group to whom you expect your results to generalize. Is it consistent with your problem statement as to the generality you have lead the reviewer to expect?

(2) Have you indicated the basis for stratification or other controls and the reasons therefore? Have you indicated the basis on which other factors are left uncontrolled?

(3) Have you indicated at what point, if any, in the sampling process random selection enters?

(4) Have you indicated the basis for the sample size which you have chosen? Be sure to indicate any pilot studies which permitted you to estimate the size of sample needed to insure a given level of precision in the study. If possible, get estimates of your parameters from other studies and use these to indicate that the precision of your study will be adequate to show the intended result.

(5) Use a sample size which is consistent with the methods you intend to employ. It is frequently better to employ careful methods and to follow-up missing cases on a small sample, than to use a large sample and ignore missing data. A selective factor may be operating in determining what is missing.

(6) If in doubt about sample size adequacy err on the size of being too large rather than too small. The overhead and fixed costs on an experiment are such that it is less expensive to include cases in the original experiment than to replicate it. Indicate the basis for this decision in your description of the sampling plan.

(7) Is the sampling plan consistent with the statistical model which you use in analysis of the data?

(8) If you are not following a sampling plan but using a convenient sample, have you indicated how this is justified and how you expect the results to generalize?

(c) Data and instrumentation - Indicate the data to be gathered and the collection methods to be used.

(1) Your measures are the operational definitions of the terms used in your hypothesis. Are these operational definitions which are generally acceptable, or is there a wide gap between the measure of the variable and what is intended by the usual connotation and denotation of the variable? (Especially important with affective measures -- values, attitudes, etc.)

(2) Have you indicated the appropriate psychometric indices (validity, reliability, objectivity) for the measures you are using? This is particularly important with new or little used measures. Remember you are writing to an intelligent non-specialist. Don't take it for granted that he knows the tests in your field unless they are quite common to the educational enterprise.

(3) Have you included copies of new instruments (tests, questionnaires, etc.), or samples of instruments that are to be built?

(4) Have you a measurement problem that even the top men have tried to solve and failed? Don't indicate that you will come up with an idea by and by. Indicate concretely how you expect to make a break-through in areas of instrument construction that have so far resisted such efforts. Pious intent is not enough.

(5) Have you indicated measures of objectivity where it is important -- rating scales, scoring of protocols, standardized interviews, essay tests, observations, etc.? Either indicate past evidence or provide for its collection in the study.

(6) Have you attended to the social-psychological aspects of data collection? Note control of these factors where relevant -- control of race and sex in testing and interviewing, etc.

(7) Indicate special provision for data collection where it is likely to involve controversy of some kind because of the topic involved, questions asked, clients used, etc.

(8) Indicate how self-selection will be controlled where a number of school systems must be screened to find those that will cooperate.

(d) Analysis - Indicate the methods that will be used for each hypothesis or question.

(1) Analysis must be consistent with objectives, design and sampling method. Use correlational techniques where you are interested in the strength of a relation, and different statistics to distinguish groups. A significant difference where one needs a correlation only indicates a correlation that is higher than zero.

(2) In multivariate designs involving analysis of variance, indicate the correct error term.

(3) Indicate how assumptions of the statistical model may be violated and what action may be taken if this is likely.

(4) If special analytic tools are to be used (e.g. computers new factorial rotations, etc.) indicate their nature and any evidence of their validity and reliability if relevant.

(e) Time schedule - Indicate in chronological order, the length of time required for each major aspect of the study.

(1) This gives an indication of how carefully and realistically you have thought through your project. Anticipate problems and leave time for them.

(2) Indicating the phasing of your project may help the funding agency get you started by supporting first phases even if they can't support the whole project.

(3) Flow charts and diagrams are helpful in demonstrating the time relations and helping you to analyze and communicate the working procedure.

Personnel - Give name title and brief statement of pertinent experience and unique qualifications of personnel.

1. Be sure to list research experience.

2. Do not list persons without their permission, particularly persons of prominence, unless you specifically indicate they are to be contacted.

3. A roster of personnel in readiness gives the impression of prior concern and preparation which bodes well for the project's success.

Facilities - Indicate special facilities and equipment which are available to the project.

1. Actively available consultation facilities should be listed.

2. Cooperation of schools and agencies that will be involved should be obtained to the extent possible and evidence of their consent included.

Budget - The budget is an operational statement in monetary terms. A carefully thought-out project translates easily into monetary terms. Budget preparation is a good test of how carefully you have teased out the details of your procedure.

1. Remember, it is rarely true that this is your last chance at the budget. It can go both up and down under negotiation.

2. You should have rationales for all items included, since these may be called for in negotiation of contract or grant.

3. It is perfectly permissible to include funds for the salaries of the investigators. Be sure to include fringe benefits of all personnel.

4. Find someone who knows the costs of relevant items and salaries, e. g., a purchasing agent and they'll be able to ease your load. Have them check your work.

5. Find out how to compute overhead and differential overhead.

Overall points -

1. A research proposal is basically a chain of reasoning, each step building on the previous one. It must hang together and be internally consistent. It should flow from the problem statement to the objectives. Your sampling and experimental procedure should match your objectives. Your analysis method should match your sampling plan and procedure, etc. Make sure that ends are not dropped, objectives slighted, data collected but no analysis plan, etc.

2. You should be cognizant of the process by which your proposal will be judged. Have you spent extra time on the parts that will be most critical in the judging process? Have you skipped the items that may be important?

3. Have you supplied extra information regarding procedures, instruments, etc. in the appendix, out of the way of the write-up, but available?

4. Even the best proposal writer benefits from others' critiques of his write-up. Has anyone read yours for you?

5. Try putting the proposal aside and then coming back to it afresh and looking at it in perspective.

6. Make sure your proposal falls within the scope of the funding agencies program. Many so-called research problems are really attempts to use an already tested idea in a new context. Such action oriented proposals might better be directed to a demonstration program, or a development program. Are you applying to the right funding agency, and the right program within the agency?

7. Proposal writing is a fine balance, On one hand you need to lay out a study in sufficient detail that the reviewer is convinced that you have a problem worth investigating and that you have the ability to handle it. On the other hand you need not give so much detail that you lay out every single possibility and eliminate any flexibility from your plan. Half the candy of a research project is in exploring an area. A researcher worth his salt will want his fun. Any proposal that is not built around a trivial problem cannot be anticipated in all details and reviewers know this. Try to find the balance line.

Best wishes for some significant research!

Attention was also called to the publication, "Cooperative Research Program," which is available from the U. S. Department of Health, Education, and Welfare upon request.

Copies of Bulletin 15, "Sampling - Elementary Principles," by Philip J. McCarthy, were distributed to participants. Single copies of

this bulletin are available upon request for 25 cents each from Distribution Center, New York State School of Industrial and Labor Relations, Cornell University, Ithaca, New York.

An expression of appreciation was given to Dr. Krathwohl for his contributions to the conference.

Fourth General Session - November 6, 1963

The session was called to order at 1:30 p. m. by Bruce Gaylord.

Dr. Harold R. Cushman, Conference Chairman, gave instructions to the afternoon work groups. These instructions were:

1. Study reports of completed research projects or research proposals submitted in advance by several states.

2. Suggest improvements in the design of the research projects or proposal studied and prepare a committee report.

3. Discuss research proposals of committee members.

The members of the various work groups and research topics studied are listed below:

Group I

"Testing A Procedure for the Improvement of the Reading Ability of Pupils in Vo-Ag Classes" by V. R. Cardozier

Chairman: Daniel Koble

Members: Cushman, Hash, McClay, Renzelman, Pearce

Group II

"The Effectiveness of Teaching Parliamentary Procedure Through Use of Programmed Instruction" by James Hanneman

Chairman: Homer Judge

Members: Barwick, Annis, Drake, Lechner

Group III

"The Pennsylvania Vo-Ag Interest Inventory" by R. W. Walker, G. Z. Stevens, and N. K. Hoover

Chairman: Gene Love

Members: Bail, Becket, Campbell, Robertson, Taylor

Group IV

"A Study to Identify the Nature of the Major Professional Difficulties Encountered by Teachers of Vo-Ag in Texas" by Earl S. Webb

Chairman: Harold Noakes

Members: Stevens, Gaylord, Gilman, Wolff

Group V

"The Comparative Effectiveness of Two Types of Organizing and Teaching Farm Credit to Vo-Ag Classes" by David McClay and Otto Legg

Chairman: Virgil Christensen

Members: Addison, McGhee, Katz, Nielsen, Towne

Fifth General Session - November 7, 1963

Chairman: David R. McClay Secretary: William E. Drake

The fifth session was convened at 8:30 a.m. by David R. McClay, presiding officer.

This session was devoted to critiques of research reports and proposals studied by the work groups during the previous afternoon.

A panel of four researchers listened to the reports by the group chairmen and reacted to the strengths and weaknesses of the committee reports and the research being criticized. The panel members were:

Jason Millman, Assistant Professor, Educational Psychology and Measurement, Cornell University

Duane M. Nielsen, Research and Teacher Education Specialist, U. S. Office of Education

Glenn Z. Stevens, Professor, Agricultural Education, Pennsylvania State University

Lawrence B. Darrah, Professor, Marketing and Agricultural Economics, Cornell University

Work Group Committee Reports

The material presented herein includes only the committee reports with implications for improving the research studied. Copies of the research proposals were distributed and a limited number are still available from the Agricultural Education Division at Cornell.

Group I Chairman - Daniel Koble, State Director, Agricultural Education, Delaware. "Testing A Procedure for the Improvement of the Reading Ability of Pupils in Vo-Ag Classes."

Overall, the committee thought this was a reasonable research proposal. Many strong points could be listed. However, in order to improve this proposal, the committee suggests the following changes:

1. Cite evidence to support statements made under justification. (Assumptions made would be best reported as hypotheses).

2. Make a more comprehensive review of literature in related disciplines.

3. Weave review of literature together. See that it will serve as a measure of progress achieved by previous research.

4. Construct a more specific objective, e.g., to test the effectiveness of a proposed program for improving the reading comprehension of 9th and 10th grade vocational agriculture students in selected Maryland high schools.

5. Transfer present objectives not covered in revised objectives to procedure.

6. Specify procedure for selection of sample. (Spell out criteria, size, etc., in greater detail).

7. List statistical procedures that will be employed in analysis of data.

Group II Chairman - Homer Judge, Head, Agricultural Education Department, University of Massachusetts. "The Effectiveness of Teaching Parliamentary Procedure Through Use of Programmed Instruction."

Statement of the Problem

1. Should be in statement form rather than question form.
2. In applying Krathwohl's criteria, Hanneman's introduction should be included in the statement of the problem.
3. The topic treated is not in keeping with the majority of the vocational areas taught in vocational agriculture. The committee feels that a programmed experiment in a non-academic area of vocational agriculture would be more effective in providing the evidence necessary for agricultural educators to make valid decisions regarding the effectiveness of programmed instruction in vocational agriculture.

Use of Previous Research and Other Auxiliary Information

1. Build foundation for generalizations through a more comprehensive review of previous research. Cite specific, concrete examples.

Purposes

1. Makes no explanation of any other kind of instruction other than programmed instruction, if any. The committee believes that the purpose is to make a comparison rather than to determine an effective method. What is programmed learning being compared to?

Population Selection

1. Would be much better if he stated the control groups were made up of practically all the Ag Departments in South Dakota other than experimental groups.

Sampling Techniques

1. Appropriate random sample for size of state.
2. Could be more explicit of procedure used in random sampling.

Assumptions and Limitations

1. There may be a Hawthorne effect.
2. Differences between the experimental groups and control will be due to subject matter covered by program not to pattern of teaching.
3. He hopes a positive correlation will exist between the success on the criteria examination and the ability to use the information during an active meeting. This is an unwarranted assumption.
4. If his test is used in South Dakota, he doesn't have a limitation.
5. One of the greatest limitations of the study which was reoognized by the researcher was the lack of external criterion for determining the validity of the test used.
6. Missed a basic assumption, that the knowledge of parliamentary procedure by the Ag III and IV groups is a just criteria to measure the knowledge of Ag I students.

Variables Considered

1. Variables used in this test are programming and nothing.
2. Example - (Demonstrating the use of fertilizer on one plot and no fertilizer on another).

Criterion Used

1. Does criterion test evaluate the program, the method, or both? Should someone else have made out the criterion examination?

Model or Experimental Design Used

1. Using acceptable design but not applied in a manner which will bring forth any proof. Demonstrating a procedure rather than gaining a comparative measure against conventional teaching methods.

Data Collection, Procedures Followed, Treatment of Statistical Data

1. Data collection acceptable.
2. Used an apparently acceptable procedure for determining the reliability of the criterion examination.
3. The committee agrees that acceptable statistical methods are being used. However, the committee questions whether or not the results of this statistical analysis will offer any evidence that is not readily available by observation.

Reporting, Summarizing, Conclusions and Expected Utilizations of Results

1. Not included in this proposal.

Title

1. "Demonstrating the Teaching of Parliamentary Procedure Through the Use of Programmed Instruction" is suggested as a more appropriate title for the study as seen by the committee.

Other Recommendations

1. This is a much better study than the criticism of the committee would lead you to believe.

Group III Chairman - Gene M. Love, Assistant Professor, Department of Agricultural Education, Pennsylvania State University. "The Pennsylvania Vo-Ag Interest Inventory."

Generally speaking the review committee found very few criticisms of the study titled "Development of a Vocational Agriculture Interest Inventory for Guidance of Eighth Grade Students," conducted by Dr. Paul Walker at the Pennsylvania State University. It was the unaminous opinion of the group that the study had been well formulated and executed. The purposes were sound and respectable.

The one criticism which the committee was able to make concerned sampling technique. Although the sample was large enough to permit the researcher to accomplish his objectives and to generalize to a point which would permit the test to be used with Pennsylvania 8th grade students where 9th grade vocational agriculture is offered, the committee felt that a broader norm base or a more complete sampling of a wider range of 8th grade students from other areas of the state may have permitted the researcher to generalize to an even further degree. For example, will the Pennsylvania Inventory predict far success in agriculture classes in a New York or Philadelphia school where agriculture is taught?

Other questions asked by the committee were:

1. Does the Pennsylvania Vo-Ag Interest Inventory discriminate between students with high and low IQ's?

2. Why wasn't the Kuder-County Agent, Veternarian and Forsterer Keys correlated with the Kuder Vo-Ag Key and the Pennsylvania Vo-Ag Interest Inventory?

3. Could this study have been expanded or should it be followed up with additional research to determine the value of the Pennsylvania Interest Inventory?

4. Should the response items have been patterned more closely after the Kuder which used three item choices for predicting success at higher grades?

Statements:

1. Test is limited to one interest group -- agriculture.
2. Vo-Ag Key for the Kunder Preference Inventory was a significant development.

Group IV Chairman - Harold L. Noakes, Associate in Agricultural Education, State Department of Education, New York. "A Study to Identify the Nature of the Major Professional Difficulties Encountered by Teachers of Vo-Ag in Texas."

1. Descriptive research should suffice to base further research upon.

2. One-way tables do not provide data to the degree that two-way tables will.

3. Multiplying responses of ten supervisors in the state by the number of teachers in their respective area and reporting responses in terms of weighting.

4. Train supervisors to interview on basis of random sample from each district to provide greater response and completion.

5. Cut down on items to obtain key items or indicative items for an entire area and further guarantee complete responses on the instrument.

6. Prepare a table of contents and number pages.

7. Preparation of "dummy" tables or data tables in which to enter data upon receiving instruments from respondents.

8. Describe procedure for identifying separate items of the instruments.

9. Indication of review of literature in the area of study.

10. Improve mechanics of the instrument to prevent incorrect or misinterpreted responses in headings provided.

11. Instrument calls for negative and positive response but tabulation is only provided for the negative reason within the experience. Two-way tables would prevent this difficulty.

12. Table describing alma mater of respondents is not relevant to the study.

13. Clear, concise, focused purposes were commendable with the exception of definition of terms:
    (a) Professional
    (b) Nature
    (c) Difficulties

14. Recommend the description of procedure for follow-up on the non-respondents.

15. Details of design appear to be lacking.

16. Provisional comments fail to indicate the need for the study.

17. Failed to answer PURPOSES #2, 3, 4, and 5 because the professional difficulties are not reported in terms of the various criteria identified in these purposes.

18. The study should be in two parts on the basis of its purposes, and not on the rationale of the sample!

19. Need for delineating the study in terms of assumptions.

20. Potential exists for skewed results due to the absence of graduates of some institutions of higher education in Texas.

21. Total population for sampling procedure is not identified.

22. Possibility of bias exists as a result of sampling procedure.

23. Data not analyzed with respect to purposes cited.

Group V Chairman - Virgil E. Christensen, Assistant Professor, Agricultural Education Division, Cornell University. "The Comparative Effectiveness of Two Types of Organizing and Teaching Farm Credit to Vo-Ag Classes."

The Problem

1. The statement of the problem lacks in "robust-tivity" as does the rest of the proposal.
   (a) Too heavy a reliance on Legg's objectives instead of stating objectives of this study.
   (b) Ambiguity of terminology in points 1 and 2 under objective A.
   (c) Part B fails to identify "commercial literature."
   (d) Hypotheses are never stated in the proposal.
   (e) The variables are not clearly defined, such as what types of questions were to be asked in the achievement tests, what were the dependent and independent variables.
   (f) By referring to the summary, it was possible to determine that different answer sheets were used in testing. No mention of such use of different answer sheets was made in the statement of the problem.
   (g) It does not appear that hypotheses were logically deduced from some theory or review of literature.

Instrument Developed

1. We have no way of knowing what instrument was to be used or how one was to be developed. (P. 2 of #61-240).
2. No evidence of a pilot program or other means of establishing reliability, validity and objectivity of "the instrument." (P. 2 of #61-240).
3. No indication of the nature of the questions to be used in test and retest -- such as fact and figure, general principles, problem solving, etc.
4. No indication of whether retention test was to measure recall, recognition, reconstruction, or relearning.
5. Two control measures were included but additional but equally important ones might have been included such as mathematical competency.

The Design

1. Population studied was not clearly defined nor was sampling procedure outlined.
2. No control was listed in the design and the model is not very explicit.

	X States	Y States
9 and 10	L	P
11 and 12	P	L
Adults	L	P
Adults	C	C

(2nd page of #62-276)

3. No way of knowing on what basis size of sample was delimited.
4. We have to recognize the vested interests of the supporting agency but a great sacrifice of representativeness was thereby lost. A more tightly designed study in one state would probably have yielded more to both the researcher and sponsor.

Procedure

1. The treatments and methods of collecting data were not described so that an independent investigator or reviewer could replicate or evaluate the study.
2. The terminology inadequately describes the characteristics of the sample. (i.e., P. 1 of #62-276).
3. No directions were given or were plans for developing directions on the use of instruments included in the proposal.
4. Copies of the instruments were not included as appendages to the proposal.
5. Classification or grouping systems were not explained.

Analysis

1. In addition to previous statements about the instruments, no statements concerning statistical assumptions or techniques were made in the proposal.
2. The 1% level of significance, as evidenced by the summary, seems appropriate for this study.

Miscellaneous

1. P. 3, #61-240 - The use of the term "or variations thereof" creates considerable uncertainty as to study procedures.
2. P. 3, TP 3, - The time schedule is not covered by probable duration of three years.
3. The lack of commonality of instructional conditions may create control problems.
4. Operational definitions would need to be listed. (Example - Title).
5. The citing of literature must be pertinent and develop a tight chain of reasoning.
6. Without the instruments attached - we cannot tell whether control was given to important variables.

Sixth General Session - November 7, 1963

The final session of the Research Conference was called to order at 1:15 p.m. by David R. McClay.

RESEARCH EXPERIENCES

Lawrence B. Darrah, Professor
Marketing and Agricultural Economics, Cornell University

More than once during the past 2 1/2 days you have been given, as a part of this program, a man-sized portion of research techniques and philosophy which has become commonly known as "methodology." Undoubtedly, more than once you have become enthusiastic, enchanted, enamoured, even enraptured and perhaps even infatuated with research procedures. Unless I am seriously in error, chances are good that before long some of this will wear off and you will become more realistic in your attitudes, less critical of other people's research, and more confused regarding what to do and how to do it -- because all of you will be working within tight limits imposed by lack of funds, manpower, and other University duties.

I have drawn as my text for the afternoon lesson, from a statement made by Dr. Heady of Iowa State at the 1961 International Conference of Agricultural Economists, the following quotation which reflects my thoughts on research methodology as an end in itself. I quote:

"Most fields of science have their particular fads and attempts at keeping in style. This fact has been emphasized by Rogow[1] in his classification of terminology in the broad fields of social science, as well as in political science specifically. Following an earlier article on 'linguistic class indicators in present-day English', he has classified terminology (and, presumably, activity associated with terms) into U (upper class) and non-U. The term U was originally used to distinguish words in 'correct, proper, legitimate, appropriate usages' from those which are 'incorrect, not proper, not legitimate'. Hence, Rogow classified scientific terms which are 'sophisticated, modern, knowledgeable', as compared to those which are 'crude, obsolete and uninformed', using the distinctions of U and non-U. Part of his classification follows:

> 'Currently, behavior and methodology are entrenched in U vocabularly. Symbol is U; word is non-U. Variable and interaction are U. So are model, especially equilibrium model, matrix, and cells (cells in matrix are exceedingly U). Empirical is U ... whereas value is non-U. Quantitative is U, against qualitative non-U. Mathematics and statistics are U ... Game theory is ultra-U in U circle ... The New York Times is U; all other newspapers are non-U ... U departments have chairmen, non-U departments have heads ... Research is U ... Teaching and teaching assistant are non-U ... Related terms are U scholar, and non-U administrator ... U professors go on leaves; non-U professors take sabbaticals ... Research books and articles are U, textbooks are non-U, and collections of readings are the most non-U of all ...'"

There are two types of research. There is research for the sake of research, and, most important, research to solve problems. The latter is where your emphasis should be placed. To conduct successful problem-solving research requires three steps:

1. The visualization and definition of problems that need to be solved.
2. Obtaining accurate data and making trustworthy observations.
3. Using the proper "tools" to carefully analyze the data.

Most researchers do not know all there is to know in their field, so good problems usually can be visualized at a more rapid rate than funds and time available permit to be solved.

The job of a research worker is to recognize the important problems and use the most appropriate and effective tools available to solve these problems. However, recognition of the problems, in themselves, is not

---

1/ Rogow, A. A., "A Short Note on U and non-U in Political Science," Western Political Quarterly, Vol. XIII, No. 4.

sufficient. The problems must be clearly defined. This is often overlooked because (1) it is a dull, routine process, (2) the time is usually short, (3) it is frequently and erroneously assumed that bias and prejudice will be injected into the study, and (4) it is largely a non-U activity. Through definition of the problems, a research worker places himself in a position to prepare questionnaires that will avoid the collection of information of little or no value. Not only will this save time and money but it will insure that the data collected will be pertinent to the problems. Far too many research workers in all fields have been grabbing hold of an apparently prestigious tool and then trying to find a problem or some data on which to use the tool. There is no denying that we need new tools with which to work. There is no denying that we need to make better use of the tools we now have. But the real problem is whether the method or tool is useful in solving the problems. All too often we, in the social sciences, rely upon surveys to obtain information when there may be alternative ways of obtaining better, more reliable information. In my own area of work, we have made use of, for example, the photo-projection technique to obtain survey data. In this procedure a photo depicting a particular family situation is presented to the respondents and the questioning is related to what the respondent believes the situation represents and how and why the respondent believes the family depicted will react to a given condition. We have used the relatively new psychological procedure of asking respondents what their neighbors will do or have done under given conditions and the reasons for such. Both of these procedures are valuable means of obtaining data under circumstances wherein the true answers may not be socially acceptable or rational. Also, we have resorted more and more to the use of controlled marketing experiments to discover consumers' reactions rather than use surveys. We have found that there is a major difference between what people say they will do and what they will actually do when there is a price tag involved, or if the true answers lie in the area that many consider to be socially unacceptable or irrational.

Gathering of accurate data and making trustworthy observations is one of the most non-U activities of all, yet it is absolutely essential for good research work. Faulty data may make research work worthless or, even worse, misleading. Keep in mind that the greatest help in getting the correct data and the proper answer is to ask the right questions or to use the appropriate setting from which the right answers may be obtained. Even asking the right questions can lead to errors because people will often mislead enumerators through an effort to give the kind of answers in which they believe the enumerators are interested. This suggests that one may need to run a check to measure the degree of falsification or use a different study procedure that would minimize the potential error. For example, last February we conducted a survey of consumer familiarity with and use of 21 new food products. As a check, we included as one item a fictitious product with a familiar company name, and one fictitious company name. For the fictitious product with a familiar company name, about five per cent of the housewives said they were familiar with it and a third of this group said they had made purchases of it. For the fictitious product with a fictitious company name, three per cent reported knowing of it and a fourth of the group claimed to have purchased it. Of course, some of this reported familiarity and use could have been honest errors resulting from

confusing the product with some other one, but the moral of the story still remains -- use the best research techniques available to avoid expected bias because even asking the right questions may lead to problems.

Perhaps this argues for the need to identify the answers, as closely as possible, prior to conducting a survey to insure asking the respondents the right questions. Let me give you a couple illustrations. A survey regarding consumers' acceptance of waxed milk cartons encountered an unexpected low acceptance rate on the part of the Jewish people surveyed. The problem, which was not anticipated, was that these people feared the wax coating may have been derived from animal by-products. Had this situation been anticipated, alternative questions on religious beliefs and the impact of such could have been asked, or a statement made concerning the derivation of the wax, either of which should have resulted in more appropriate information. As a result of another survey, a firm produced a sanitary product wrapped so it could be carried by potential users and used for those emergency situations that do develop. Sales never reached the anticipated level because customers bought the item once and carried it just for an emergency - and apparently emergencies did not often arise. Clearly, asking questions regarding the frequency with which emergencies arise would have resulted in a more realistic appraisal of the potential market.

Asking the right questions in the right manner is difficult to do, and especially if the true answer is in the socially unacceptable or irrational area - as many of the answers undoubtedly are in your field. Even the relatively new photo-projection technique, or the procedure of asking a person why her neighbors do or do not follow a particular practice faces some of the same handicaps as direct surveys when the answers may not be socially acceptable. Even asking a few appropriate questions in advance of a study may well save considerable work as is illustrated by a consumer acceptance study we made of a new type egg carton (describe carton). Sales started out relatively high and dropped throughout the market test. The basic problem was the consumers could not figure out how to open the carton. Some used knives, screwdrivers, forks, and what have you to open the carton -- never stopping to read the simple instructions that said "open here." Asking a number of consumers just one simple question, the right question, would have turned up the true answer promptly and saved the company several thousands of dollars in production and market testing expenses.

Asking the right questions requires a solid definition and understanding of the problem with which you are to work. This, as mentioned previously, is an extremely non-U activity but mark it down, underline and footnote it -- because it is fundamental in good research.

Now for a look at some sampling patterns that have been used. First, let's note a case where a sampling pattern may be cleverly designed but still be a "trap" for the researcher. Take a cholesterol study recently made in the Boston area. A sample of 1,000 first generation Irishmen was selected for study in the area. Then an attempt was made to get blood brothers of these folks still living in Ireland, and 300 were obtained. So

far, this sounds like a U-sample. Analysis of the two groups showed that the ones in Ireland, and note this carefully, ate substantially more fat, ate more calories, were lighter weight and had a lower incidence of heart trouble than their brothers that had immigrated to the United States. This analysis surely indicates some interesting results -- something happened to the U. Do you see any pitfalls in the sampling pattern? (Allow discussion.)

Let's look at it critically. First, those that picked up and moved 3,000 miles to the "land of opportunity" must have been different than those that chose to remain at home -- they must have had more get-up-and-go, must have been unsatisfied with their conditions and willing to gamble for a better life. And this is right. In this country the people were largely in executive type, high-pressure jobs; those in Ireland, were primarily farmers and laborers. This suggests that even with a clever, clearly U sampling idea, things can backfire. This is one of the many pitfalls into which research workers may stumble unless they ask the right questions about their populations and keep their eyes open at all times! It certainly would have contributed to the study to do the reverse, i.e., take a sample of people here and compare them with brothers who had moved to Ireland to live, but I suppose this is a non-U activity.

In another study where sampling was used, a normally very minor and completely unsuspected factor led to a costly production and marketing error. One of the major toilet paper manufacturers in the country decided that they had better get into the production of colored paper -- to keep pace with competitors or to give greater consumer satisfaction, I don't know which. They hired one of the nation's leading research firms to determine what colors they should produce. A probability sample was drawn, a survey made, and the colors one would expect to be preferred -- green, yellow, blue and pink showed up, but topping the list was rose. The company made rose colored paper but it didn't sell. Now, you might ask, what the ---- went wrong. Did people change their minds? Do color preferences for toilet paper change with the seasons? Do people want cool colors in the summer and warm ones in the winter? Was it a poor sample? or What? (Allow discussion). The answer was in sampling, although it was a good U-sample from all apparent aspects. About a third of the families interviewed lived in a major housing area in which all the bathrooms were rose colored and they wanted matching paper. For the country, there were relatively few rose colored bathrooms. But, how could the sampling specialists ever know this in advance. I am sure that checking the color of bathrooms is an extremely non-U activity for research workers. I might add at this point, that a controlled market test in which the various colors were offered for sale to consumers would have given a more reliable answer.

Sometimes emergencies arise and you need information real quick. Here sampling is of real value because you may not have the time and money to make a complete enumeration, or are too lazy to do it. In Rochester last fall there was a major egg merchandising study underway and we were cooperating in a limited way with the program. Very early, we found a need to know, currently, the relative sales volume of the new eggs. Since the eggs being sold came from a number of suppliers, we

could not get the needed data promptly, if at all. Likewise, the stores would not permit us to keep sales records. What would you do? (Allow discussion). We simply walked into each store once on Monday and Tuesday, twice on Wednesday and Saturday, and three times on Thursday and Friday, picked out a cart, put an item in it and "shopped" through the store counting the dozens and brands of eggs in each shopping cart. Of course, we usually replaced the item or items we were presumably going to purchase on the shelf, parked the empty cart and walked out of the store. Snooping in other peoples' shopping carts is a non-U job, but we came up with a figure of ten per cent of the egg sales being the new item -- which was exactly what the final figure was when it became available after the test was over and the dust had settled!

Another survey technique we have used is the Western Union Survey system. For at least one reason, this is a U technique. I was amazed at the prompt attention and cooperation of a respondent when the operators announced over the phone that "This is the Western Union Survey Operator." Not only were all questions answered promptly but we even had many respondents go to the refrigerator to note the brand of a particular product. I suggest this survey method where time and funds are limited and the questionnaire is relatively short and simple.

A random sample is a fine tool to use in research work. But, whenever and wherever possible, support it with all the information you have available, because a random sample may not be a representative sample. Again, may I illustrate a situation in which good judgement made it possible to make a random sample more of a representative sample. We often study consumers in Syracuse and have come to know the City pretty well. In one study, we stratified the city into four income areas based on U. S. Census data. Within each area, we numbered each of the blocks in a serpentine manner. From a table of random numbers we selected X number of blocks in each area for study. After this, the side of the block (N., E., S., W.) for study was determined (from a table of random numbers) and likewise the starting point on the side, i.e., the first, second or third house. It was an ideal random sample from the office standpoint. But in a practical sense it was terrible for the low income strata. A very high proportion of the low income blocks fell in a run-down swampy industrial section in which practically no one lived while a major low income section was virtually missed. What would you do? (Allow discussion). We simply replaced the bulk of the blocks in this area with randomly selected blocks in the other low income sections. Here, judgement took over, apparently a non-U activity, and I am sure we ended up with a more representative sample than the original one. I expect any statistician, with the same knowledge of the area, would have done the same thing.

Briefly, then, let me summarize my random comments by emphasizing again (1) the real need to design research projects to solve problems, (2) if a survey is required, develop your questionnaire carefully and be sure that you are asking the right questions, (3) consider the possibility of using other techniques or controlled experiments wherever possible as they offer a means of minimizing errors in areas where the true answers

may be socially unacceptable or irrational, and (4) don't forget to make maximum use of your major God-given asset -- good judgement -- in planning and conducting your research work and in analyzing your data.

OUR NATIONAL CENTER FOR ADVANCED STUDY AND RESEARCH IN AGRICULTURAL EDUCATION

C. W. Hill, Professor, Agricultural Education, Cornell University
and Member of the Board of Trustees

An article in the March 1963 issue of The Agricultural Education Magazine by Robert Taylor entitled, "The National Center - A New Resource for the Profession" gives the development of the Center, its purposes, how it operates and the nature and role of the Center. You have read the report. However, I would like to point out a few items.

1. The idea of a national center came into sharp focus in 1959. The Center was established in 1962 at Ohio State University.

2. The purpose of the Center as stated by Taylor in above-mentioned article: "It is envisioned that the Center will supplement and enhance the existing graduate and in-service programs of the various states. Its role is to strengthen, not duplicate, existing services."

"The broad purpose of the National Center is to develop competent personnel who can provide leadership in further developing agricultural education. Some of the major concerns are:

1. "To provide continuing reappraisal of the role and function of agricultural education in the public schools;

2. "To upgrade state leadership in agricultural education through advanced study and in-service education programs;

3. "To provide educational opportunities for individuals contemplating foreign assignments and leaders from other countries responsible for administration and supervision of agricultural education;

4. "To coordinate research undertakings among states, initiate research where needed, and strengthen state programs of research."

One of the Center's first undertakings was a workshop for state supervisors which was conducted in Tennessee in January, 1963. This was in cooperation with state departments of vocational education in Alabama, Mississippi and Tennessee. It is the purpose and function of the Center to conduct workshops and conferences in regions or areas away from Ohio State. One of the next undertakings was a three-day Research Coordination

Conference on Agricultural Occupations Studies the last of May, 1963. There were 25 participants from 14 states and the District of Columbia. The major undertaking was the National Seminar entitled, "A Design for the Future" conducted at Ohio State, July 22 to August 2. There were 104 state and national leaders, representing 34 states and several foreign countries. The report of the seminar is now at the binder's and will be mailed to the states in a few days. The Advisory Committee recommended that the reports be sold to states and individuals.

The major problem in getting the Center operating as envisioned is the need for money. Ohio State, the State of Ohio and vocational funds allotted to Ohio have paid expenses to date. Contacts have been made to secure grants from Kellogg Foundation, Sears Foundation, Danforth Foundation and others. Recently, conferences have been held to make known the need and obtain money from vocational education funds. Dr. Taylor and others are vigorously pursuing and exerting great effort to obtain finances needed to make the Center function as anticipated. This will require a sizeable sum.

Programs to be sponsored and conducted by the Center in the coming year are:

1. Conference on Developing Guidelines for Experimental Programs and Summarization Procedures for Agricultural Occupation Studies, January 13-15, 1964.

2. A National Seminar on Agricultural Technician Training. Scheduled for late spring or summer.

3. Summarization Conference on Agricultural Occupations Studies. Date will depend upon completion dates of a number of state studies.

4. Teacher Education Conference. A national invitational conference.

5. Research Project: An Inventory of State Vocational Education (All Services) Leadership, Including a Survey of Selected Aspects of State Personnel Policies.

The AVA Research Committee and the Vocational Division of the U. S. O. E. are co-sponsoring a National Vocational Education Research Conference on the Administration of Research. This conference will be held at Ohio State University, March 15-21, 1964 with Dr. Robert Taylor acting as chairman and leader for this conference. This will be an invitational conference for State Directors and Supervisors for the most part.

The Center will serve in ways in addition to the specific purposes. A few of these are:

1. It is free. Participants are free to explore and look into the future without being bound by present programs and regulations.

2. Already there is a "halo effect" associated with the Center. Specifically, individuals in agricultural education are more willing and ready to explore and accept changes. For example, supervisors look more favorably toward advanced study and research.

3. The Center can be likened to a catalytic agent in program exploration (research), planning and development.

Homer Edwards and myself are your representatives on the AVA Advisory Committee. So far, we have met twice a year. The next meeting is scheduled for December 8, 1963 in Atlantic City, New Jersey. It is our responsibility to serve you. So, it is requested that you let us know your thinking as to what the Center should do and how it should function.

RESEARCH IMPLICATIONS OF THE STUDY OF EMPLOYMENT OPPORTUNITIES AND NEEDED COMPETENCIES IN NON-FARM AGRICULTURAL OCCUPATIONS

Duane M. Nielsen, Research and Teacher Education Specialist
U. S. Office of Education

Summary of Remarks

Dr. Nielsen made an informal presentation and used the overhead projector to emphasize important points. He pointed out that the most recent legislation dealing with vocational education has been a result of the report of the Panel of Consultants on Vocational Education.

The implications of the National Education Improvement Act of 1963 was discussed. Dr. Nielsen stated that H. R. 4955 was a result of the larger act.

To be fully informed, Dr. Nielsen urged each member of the conference to obtain the following documents:

1. HR 4955 - Senate version passed on October 8, 1963.
2. Senate Report Calendar #531.
3. Congressional Record of August 6th.
4. Congressional Records of October 7 and 8.

Glenn Stevens discussed contemplated changes in the publication Summaries of Studies in Agricultural Education. He mentioned it would be impossible to continue having it printed in Washington in its present form. The possibility of merging Agricultural Education research reports with the other vocational services for a new publication was brought up.

Dr. Stevens distributed the following materials:

1. You and Research - AVA.
2. Abstracts of Research Studies in Agricultural Education Completed in 1962-63 in the North Atlantic Region.
3. The Statistical Table - Penn State.
4. Research Design in Agricultural Education, by Glenn Stevens.

The conference was adjourned at 4:30 p. m.